REMARKS

Reconsidration and reexamination of this application is respectfully requested.

Claims 1 - 7 were originally in the case and remain in the case.

REJECTION UNDER 35 USC 112

The Examiner has rejected claims 1 - 7 under 35U.S.C. 112 as containing subject matter which was not described in the specification in a manner to enable one skilled in the art to make or use the invention.

The Examiner states::

> "It is unclear where the condenser of this power plant is. In order to be operative, a thermal power plant needs to have an input heat source and a cold reservoir such as a condenser. "

The Applicant respectfully submits

As discussed below, the impeller blades function as a condenser.

The object of the present invention is to deliver a large impulse per second from the working fluid to the impeller. The cross sectional area of a stream of vapor is 27 times larger than the cross sectional area of the stream of liquid travelling at the same speed for equal rates of fluid transfer. Therefore it is desirous to emit the discharge of fluid from the reservoir as a superheated liquid rather than as a vapor in order to maintain a large rate of delivered impulse.

The Examiner has tried to compare the present invention to the well known combustion engines described in terms of the Carnot cycle and the Rankine cycle. In these cycles, the working fluid (typically water) is heated up to a temperature where, when released into a

chamber having a piston, the liquid evaporates (i.e., changes phase) to a gas (changes state) and thereby expands its volume by moving the piston. (Performs work) All of the working fluid changes phase (is evaporated). The work is performed by gas pressure, generated by the random motion of the water molecules. Once the water molecules have dissipated their thermal energy, they must be converted back to their original liquid state by means of a condenser or heat exchanger.

The present invention works from a different set of circumstances, similar to the well known steam cleaner, in which 95% of the working fluid is always maintained in the liquid phase while only 5% is converted to the vapor phase. The heat of evaporation of that 5% vapor is converted to kinetic energy of the large droplets of the working fluid.

As soon as the liquid working fluid, at critcial temperature and critical pressure, is released from the reservoir, the sudden drop of pressure causes 5% of the released working fluid to evaporate The energy represented by the latent heat of evaporation of the 5% is transferred as kinetic energy to the large droplets being the remaining 95% of the working fluid.

The pressure inside the turbine housing is ambient. The temperature of the housing and the impeller member is also ambient.

As discussed on page 9, a major part of the vapor will condense on the impeller blades and be spun off along with the liquid component to be pumped back to the reservoir. In other words, the disks themselves function as a very efficient condenser. The vapor component that does not stick to the impeller, will be forced through conduit 28 where thermal contact with the incoming fuel will further cool off the vaporous working fuel.

Furthermore, the turbine housing is in close thermal contact with the ambient environment and conducts heat from the collected liquid and vapors prior to transferring the collected working fluid back to the entry pump. (see page 9)

Therefore the impeller (disks) will perform the function of a condenser in conducting heat away from any vapor working fluid that contacts the impeller. It is within the scope of the invention to select a diameter of disk wherein one inner area of the spinning disk absorbs the heat energy from the impinging working fluid and the cooler outer area of the disks and the housing function as a heat sink for collecting spent vapor.

It is also within the scope of the invention as described to include a condenser at location 31 on conduit 28 which extracts heat from any liquid or vapor passing through conduit 28 on the way to the pump 20.

The function of the entire housing as a condenser is improved by selecting a working fluid whose boiling temperature is close to atmospheric temperature.
Under this condition, the housing does not become overheated.

(For example, pentane has a boiling temperature of
36° C. (104 °F) and is a canidate as a working fluid.

In order to deliver the working fluid from the reservoir as 95% liquid, the working fluid in the reservoir must be maintained in the liquid state, preferably just below "critical" pressure and "critical" temperature. (At "critical pressure and "critical" temperature, the heat of evaporation is zero.). In other words, the reservoir must be completely full of liquid working fluid.

A necessary condition to achieve this condition is that the rate at which liquid working fluid enters the heating reservoir equals the rate of removal of the <u>liquid working fluid from the heating reservoir</u>. This is achieved according to the invention by coupling the entry pump to the exit pump.

Contrary to the Examiner's statement, this is not a design choice. It is a requirement for the operation of the invention.

In view of these remarks, it is believed that the rejection under 35 U.S.C. 112 has been overcome.

REJECTION UNDER 35USC 103(A)

Claims 1 - 7 are rejected under 35 USC 103(a) as being unpatentable over U.S. 4788638 to Spurr et al.
The Examiner states:

> "Spurr et al discloses a powerplant comprising a turbine having a housing , impeller, reservoir exit and entry conduits in combination with pumps 60, 10,

As discussed below, Spurr's pumps, 10 and 60 are on two separate independent lines. One pump 60 is used to circulate air mixed with hydrogen through a catalyst. The other pump 60 is used to circulate freon as a working fluid through a turbine.

The Examiner continues:

> " Spurr does not disclose that the pump rates are equal. However, it would have been a matter of design choice to vary the pump rates to be equal to avoid extra fluid during the pumping process. "

The Applicant states:

The Examiner has stated that the disclosure to make the pumping rate of the entry pump equal to the pumping rate of the exit pump is a "simple design choice". This is not true nor does the observation make sense. Pump 60 pumps a mixture of air and hydrogen on one line. Pump 10 pumps freon (the working fluid) on another line

A design choice is where the designer may arbitrarily choose either one of two or more designs without affecting the outcome or behaviour of the invention. For example, if an inventor has invented and is building a house, he may choose either square or round windows with no effect on the function of the house. That is a true design choice. In the case of the present invention, the pumping rate of the exit pump MUST equal the pumping rate or there will be an accumulation or loss of working fluid in the reservoir and the invention won't work.

Shurr's pumps 60, 10 are on two different circuits and are in no way conparable to the pumps of the invention.

Schurr's pump 10 is a "compressor that forces air containing hydrogen through a reaction chamber 44 where, in the presence of a catalyst. The air stream is heated by the hydrogen combining with the oxygen. The heated gas then passes through a heat exchanger 52 where it gives up its heat and then passes back to the compressor

10. In other words, the function of the compressor 10 is to circulate air through a catalyst to generate heat which is then surrendered in the heat exchanger. 52. Pump 60 is not involved in the circulation of the air stream.

Regarding Schurr's pump 60, the heat absorbed in the heat exchanger (58) heats up a working fluid (54) which drives a turbine (58). The pump 60 pumps the working fluid (54) around a <u>closed</u> circuit that includes the heat exchanger (52).

So pumps 10 and 60 of Spurr are on two separate lines and in no way can be compared to the inlet and outlet pumps of the applicant's invention.

The pumps of the present invention are coupled together. Coupling of the entry and exit pumps accomplishes two objectives which are crucial to the operation of the system.

The first objective is that, by coupling the two pumps together, the work required to force working fluid into the reservoir is equal to the work performed by releasing the working fluid from the reservoir (for delivery to the turbine). Therefore, there is no net energy required to circulate the working fluid through the reservoir.

The second object is that the volume of fluid in the reservoir is constant.

These statements are fully supported in the specification. (See summary, page 7)

In view of the above it is believed that the reasons for rejecting claims 1 - 7 under both 112 and 103(a) have been overcome and claims 1 - 7 are in condition for allowance.

Amendments to the specification have been included to overcome spelling and grammatical errors.

Allowance of all claims is earnestly solicited.

Respectfully submitted.

Robert S. Smith

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